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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/874,538	06/05/2001	Rajankikant Jonnalagadda	H0001839	5236

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EXAMINER

LEO, LEONARD R

ART UNIT	PAPER NUMBER
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3753

DATE MAILED: 10/19/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/874,538

Applicant(s)

JONNALAGADDA ET AL.

Examiner

Leonard R. Leo

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 09 July 2004.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-6, 8, 11-13 and 17-25 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-6, 8, 11-13 and 17-21 is/are rejected.
- 7) ☒ Claim(s) 22-25 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

The amendment filed on July 9, 2004 has been entered. Claims 1-6, 8, 11-13 and 17-21 are pending.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1-6, 8, 11 and 13 are rejected under 35 U.S.C. 102(b) as being anticipated by Zimmermann (Figure 7). Regarding claim 6, the slot h⁴ is believed sized to permit a suitable pressure drop and heat exchange. Regarding claim 8, it is inherent that the skilled artisan would employ contemporary methods and tools to design the device of Zimmermann. The use of numerical methods, computer aided design, beta testing, prototyping, and trial and error experimentation to design heat exchangers is not novel.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 6, 8 and 11-13 are rejected in the alternative under 35 U.S.C. 103(a) as being unpatentable over Zimmermann.

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Zimmermann discloses all the claimed limitations except calculating pressure losses and sizing the isolation and flow direction control plates accordingly.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to employ calculate pressure losses and size the isolation and flow direction control plates accordingly. The aforementioned steps are merely typical and necessary steps in designing heat exchangers. As noted above, employing contemporary methods and tools, such as numerical methods, computer aided design, beta testing, prototyping, and trial and error experimentation to design heat exchangers is obvious.

Regarding claim 12, varying the residence time is a factor inherently considered in the contemporary methods and tools mentioned above.

Claims 17-18 and 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Zimmermann in view of Maniscalco.

The device of Zimmermann lacks slots having different cross-sectional areas.

Maniscalco discloses a heat exchanger comprising a shell 6 having an inlet 14 and outlet 15; a tube side inlet 28 and outlet 29; and a plurality of IFDC plates 10 having a plurality of slots 12 of different cross-sectional areas for the purpose of gradually passing the shell side fluid through the IFDC plates to reduce pressure loss.

Since Zimmermann and Maniscalco are both from the same field of endeavor and/or analogous art, the purpose disclosed by Maniscalco would have been recognized in the pertinent art of Zimmermann.

It would have been obvious at the time the invention was made to a person having ordinary skill in the art to employ in Zimmermann IFDC plates having a plurality of slots of

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different cross-sectional areas for the purpose of gradually passing the shell side fluid through the IFDC plates to reduce pressure loss as recognized by Maniscalco.

Claims 19 and 21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Zimmermann in view of Bell, Opitzer, Jenis et al or La Mori et al.

The device of Zimmermann lacks a turbine environment.

Bell, Opitzer, Jenis et al or La Mori et al discloses it is well known in the art to employ a turbine connected in series to the shell side outlet of a heat exchanger for the purpose of reheating steam prior to its entry into the turbine stage.

Since Zimmermann and Bell, Opitzer, Jenis et al or La Mori et al are both from the same field of endeavor and/or analogous art, the purpose disclosed by Bell, Opitzer, Jenis et al or La Mori et al would have been recognized in the pertinent art of Zimmermann.

It would have been obvious at the time the invention was made to a person having ordinary skill in the art to employ in Zimmermann a turbine connected in series to the shell side outlet of the heat exchange for the purpose of reheating steam prior to its entry into the turbine stage as recognized by Bell, Opitzer, Jenis et al or La Mori et al.

Allowable Subject Matter

Claims 22-25 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Response to Arguments

The rejection under 35 U.S.C. 112, second paragraph, is withdrawn.

The rejections in view of Simons and Harper are withdrawn.

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Applicants' arguments have been fully considered but they are not persuasive.

Figure 7 of Zimmermann discloses a plurality of fluid slots *h*⁴ in at least one isolation and flow direction control plate *h*.

In response to applicants' argument that fluid slots of Maniscalco are not normal to the path of the shell side fluid path and parallel with the tubes, the test for obviousness is not whether the features of a secondary reference may be bodily incorporated into the structure of the primary reference; nor is it that the claimed invention must be expressly suggested in any one or all of the references. Rather, the test is what the combined teachings of the references would have suggested to those of ordinary skill in the art. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981). Maniscalco teaches one of ordinary skill in the art to employ a plurality of slots of different cross-sectional areas for the purpose of gradually passing the shell side fluid through the IFDC plates to reduce pressure loss.

The rejection of claims 19 and 21 in view of Bell, Opitzer, Jenis et al or La Mori et al are deemed correct for lack of any arguments to the contrary. Specifically, there is no argument that the secondary references do not teach a tube and shell heat exchanger in combination with a turbine assembly. Applicants' argument merely states the primary reference of Zimmermann does not disclose at least two fluid slots, which has been addressed above.

Lastly, although the Examiner recalls a telephone conversation with Mr. Matthew T. Shanley regarding the request for information, the resolution of the discussion is unclear. The request from the previous Office action is repeated below.

With respect to applicants' "Background of the Invention" section, the Examiner requests any and all documents associated with the "Background Art," so that the particular relevance and critical dates may be determined. The Examiner also requests applicants to specifically point out which paragraphs do not qualify as prior art under 35

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USC 102. As previously discussed, pages 1-3 (i.e. paragraphs 3-11) are deemed to be prior art. For example, paragraph 4 discloses "Shell and tube heat exchangers are the *most common* type of the heat exchanger." Paragraphs 5-6 disclose "The use of baffle plates on the shell side of heat exchangers has been *in existence for many years*." Paragraphs 7-10 disclose principally Figures 1-2, which flows from paragraphs 5-6. Lastly, paragraph 11 discloses that applicants are aware of the use of tube and shell heat exchangers in combination with a turbine in a CVD environment. Although, the prior art submitted on the PTO-1449 filed on January 31, 2002 are related to CVD devices, the Examiner request applicants to state their particular relevance to the instant invention.

The Examiner's main concern was to determine the novelty of the instant invention based on applicants' prior art admission. However, upon further search, the prior art of Bell, Opitzer, Jenis et al and La Mori et al have been applied and deemed to be proper. 37 CFR 1.56 states in part,

The public interest is best served, and the most effective patent examination occurs when, at the time an application is being examined, the Office is aware of and evaluates the teachings of all information material to patentability.

Conclusion

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Leonard R. Leo whose telephone number is 703-308-2611. The examiner can normally be reached on Monday thru Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Gene Mancene can be reached on 703-308-2696. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.



Leonard R. Leo
Primary Examiner
Art Unit 3753

October 18, 2004